Arthropoda Selecta 28(4): 556–561

A new species of *Lachesana* Strand, 1932 (Aranei: Zodariidae) from Southern Kazakhstan

Новый вид рода *Lachesana* Strand, 1932 (Aranei: Zodariidae) из Южного Казахстана

Alexander A. Fomichev[1], Yuri M. Marusik[2,3]
А.А. Фомичев[1], Ю.М. Марусик[2,3]

[1] Altai State University, Lenina Pr., 61, Barnaul, RF-656049, Russia. E-mail: a.fomichov@mail.ru
[1] Алтайский государственный университет, просп. Ленина, 61, Барнаул, 656049, Россия.
[2] Institute for Biological Problems of the North RAS, Portovaya Str. 18, Magadan, 685000 Russia. E-mail: yurmar@mail.ru
[2] Институт биологических проблем Севера ДВО РАН, Портовая 18, Магадан, 685000 Россия.
[3] Department of Zoology & Entomology, University of the Free State, Bloemfontein 9300, South Africa.

KEY WORDS: Ant-eating spiders, Araneae, Central Asia, Lachesaninae, new species.
КЛЮЧЕВЫЕ СЛОВА: Пауки-муравьеды, Araneae, Центральная Азия, Lachesaninae, новый вид.

ABSTRACT. A new species *Lachesana dyachkovi* sp.n. is described from Southern Kazakhstan based on a single male. The new species is related to *L. tarabaevi* Zonstein et Ovtchinnikov, 1999 and differs from it by the shape of the male palp, strongly modified cheliceral fang, leg spination and smaller body size.

How to cite this article: Fomichev A.A., Marusik Yu.M. 2019. A new species of *Lachesana* Strand, 1932 (Aranei: Zodariidae) from Southern Kazakhstan // Arthropoda Selecta. Vol.28. No.4. P.556–561. doi: 10.15298/arthsel. 28.4.08

РЕЗЮМЕ. Из Южного Казахстана по единственному самцу описан новый вид пауков *Lachesana dyachkovi* sp.n. Новый вид близок к *L. tarabaevi* Zonstein et Ovtchinnikov, 1999, но отличается от него строением пальпы самца, сильно модифицированными коготками хелицер, шипованием ног и размерами тела.

Introduction

Zodariidae Thorell, 1881 is a medium-sized family comprising 1166 species placed in 86 genera and five subfamilies [Jocqué, Dippenaar-Schoeman, 2006; World Spider Catalog, 2019]. The family is distributed in tropical and subtropical regions of all continents, but only a few genera are found in the Palaearctic [Jocqué, Dippenaar-Schoeman, 2006]. Zodariidae exhibit an extremely high degree of morphological and ecological diversity, including free-living ground-dwellers, burrowing and tree-living forms [Jocqué, 1991; Jocqué, Dippenaar-Schoeman, 2006]. Spiders of this family have a diet consisting of ants and termites; moreover, different species of Zodariidae are specialized in hunting different species of ants [Marusik, Kovblyuk, 2011]. So far, only two subfamilies of Zodariidae are known from Central Asia, Zodariinae Thorell, 1881 and Lachesaninae Jocqué, 1991. The latter subfamily is represented by a single genus and species in the region, *Lachesana tarabaevi* Zonstein et Ovtchinnikov, 1999 [Mikhailov, 2013]. This species is reported from Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan [Zonstein, Ovtchinnikov, 1999]. One of the paratypes of *L. tarabaevi* was collected in Southern Kazakhstan, but it is represented by a juvenile specimen, providing little confidence in its identification.

While studying material from Southern Kazakhstan, we found one male belonging to *Lachesana*. This male was later found to differ from *L. tarabaevi* and other congeners, and thus considered to represent an undescribed species. The goals of this paper are to provide both a detailed description of the new species and morphological notes of the genus.

Material and methods

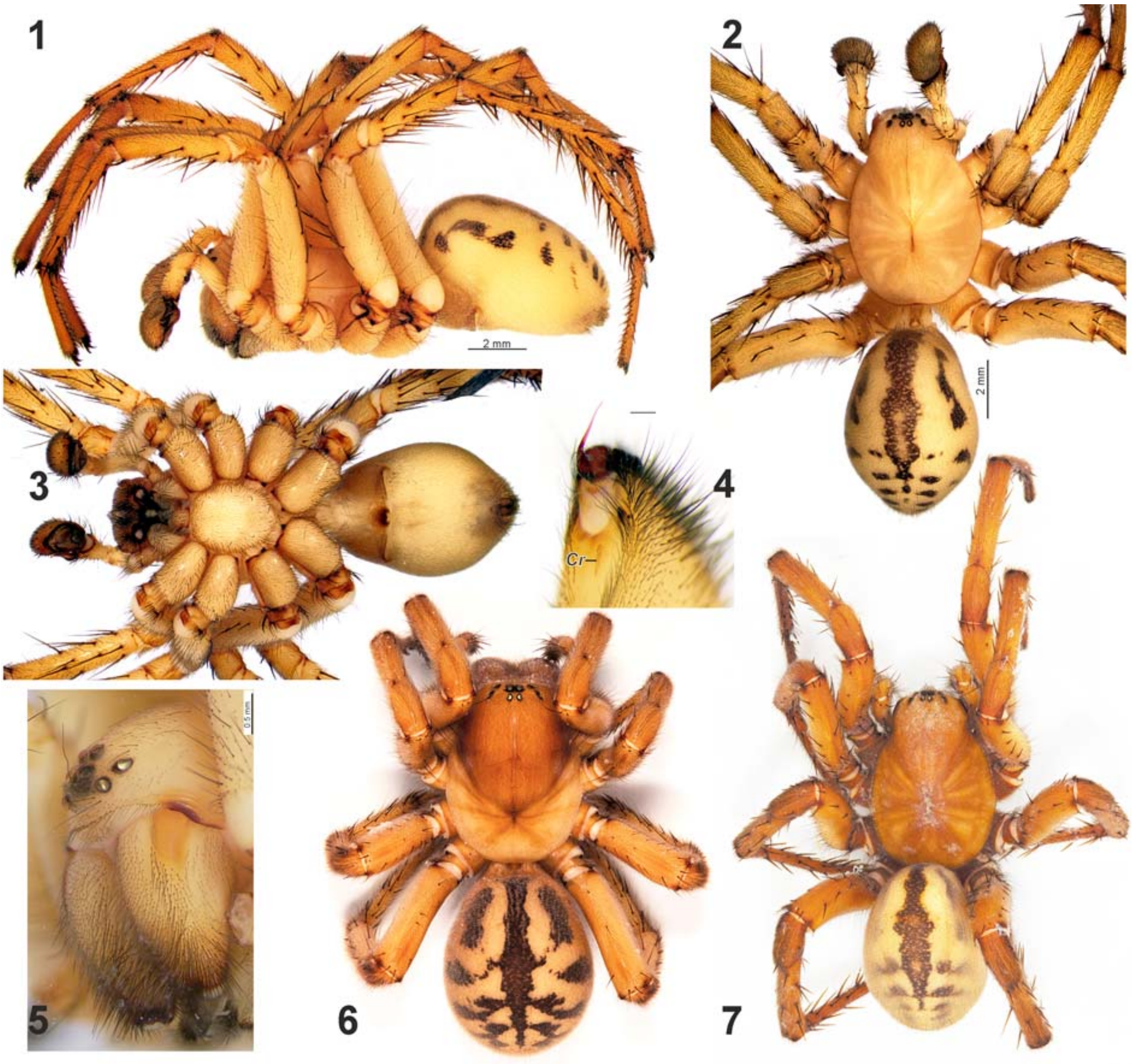
Specimens were photographed using an Olympus DP74 camera attached to an Olympus SZX16 stereomicroscope at the Altai State University. Photographs were taken in dishes with white paraffin on the bottom and filled with alcohol. Digital images were montaged using Helicon Focus software (https://www.photosoft.ru/helicon-focus/). All measurements are in millimeters. Type material will be deposited in the Institute of Systematics and Ecology of Animals, SB RAS, Novosibirsk, Russia (ISEA).

Abbreviations

Leg segments: Fe — femur, Pt — patella, Mt — metatarsus, Ti — tibia, Ta — tarsus.

Spination: d — dorsal, p — prolateral, r — retrolateral, v — ventral.

Eyes: ALE — anterior lateral eyes, AME — anterior median eyes, MOA — median ocular area, MOA-L — length



Figs 1–7. Habitus, chelicera and cephalic part of *Lachesana dyachkovi* sp.n. (1–5) and *L. tarabaevi* (6–7). 1 — lateral; 2, 6–7 — dorsal; 3 — ventral; 4 — mesal; 5 — anterolateral. Scale bars: 1–2 = 2 mm, 4 = 0.2 mm, 5 = 0.5 mm. Figs 6–7 — courtesy of S.L. Zonstein.

Рис. 1–7. Внешний вид, хелицера и головная часть *Lachesana dyachkovi* sp.n. (1–5) и *L. tarabaevi* (6–7). 1 — сбоку; 2, 6–7 — дорзально; 3 — вентрально; 4 — мезиально; 5 — переднебоковой вид. Масштабные линейки: 1–2 = 2 мм, 4 = 0,2 мм, 5 = 0,5 мм. Рис. 6–7 предоставлены С.Л. Зонштейном.

of MOA, MOA-WA — anterior width of MOA, MOA-WP — posterior width of MOA, PLE — posterior lateral eyes, PME — posterior median eyes.

Taxonomic survey

Lachesana Strand, 1932

Lachesis Savigny et Audouin*,* 1825: 110.

Lestes Gistel, 1848: IX (nom.n. pro *Lachesis*).

Laches Thorell, 1869: 37 (nom.n. pro *Lestes*).

Lachesana Stand, 1932: 140 (nom.n. pro *Laches*); Levy, 1990: 329; Jocqué, 1991: 34.

TYPE SPECIES. *Lachesis perversa* Savigny et Audouin, 1827 from Egypt.

DIAGNOSIS. Both sexes of this genus are well differentiated from other Palaearctic Zodariidae by numerous spines on all legs (>40/leg). Males of *Lachesana* can be recognized by the recurved cheliceral fangs and hollowed-out tibial apophysis. Females belonging to this genus differ by a flat epigyne lacking the median plate; long and retractable anterior spinnerets, unmodified eye positions and maxillae with a baso-lateral extension [Jocqué, 1991].

COMPOSITION AND DISTRIBUTION. The genus comprises eight named species including the new one: *L. blackwalli* (O. Pickard-Cambridge, 1872) (Mediterranean), *L. dyachkovi* sp.n. (South Kazakhstan), *L. graeca* Thaler et Knoflach, 2004 (Greece), *L. insensibilis* Jocqué, 1991 (Near East), *L. perversa* (Audouin, 1826) (Near East), *L. rufiventris* (Simon, 1873) (Near East), *L. tarabaevi* Zonstein et

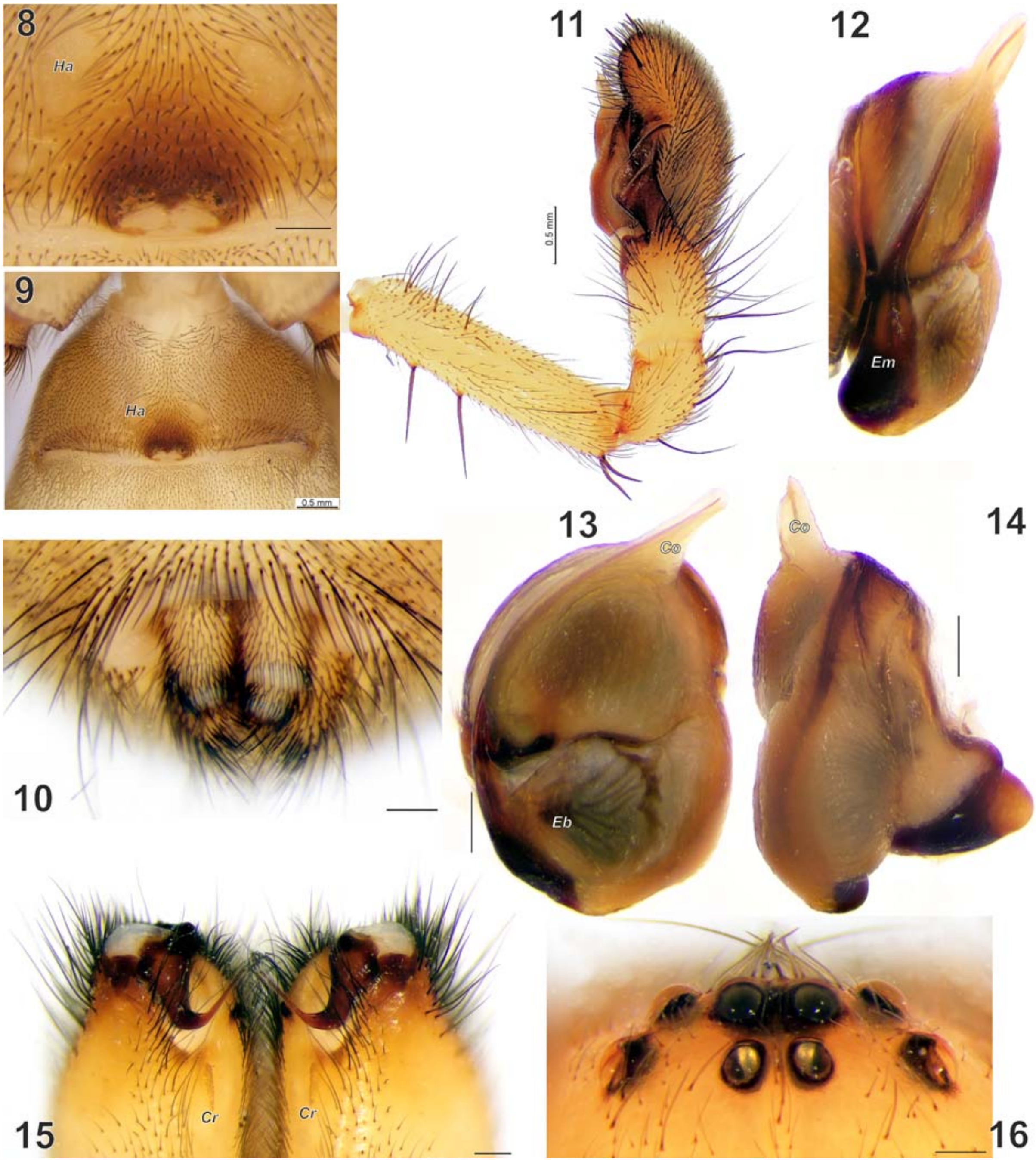


Fig 8–16. Epiandrus (8), book lungs (9), spinnerets (10), male palp (11), bulb (12–14), chelicerae (15) and eyes (16) of *Lachesana dyachkovi* sp.n. 8–10, 13 — ventral; 11, 14 — retrolateral; 12 — prolateral, 15 — posterior; 16 — dorsal. Scale bars: 8 = 0.1 mm, 9, 11 = 0.5 mm, 10, 13–16 = 0.2 mm.

Abbreviations: *Co* — conductor, *Cr* — row of pigment dots of cheliceral groove; *Eb* — base of embolus, *Em* — embolus, *Ha* — hairless areas of the epigaster.

Рис. 8–16. Эпиандрус (8), лёгочные книжки (9), паутинные бородавки (10), пальпа самца (11), бульбус (12–14), хелицеры (15) и глаза (16) *Lachesana dyachkovi* sp.n. 8–10, 13 — вентрально; 11, 14 — ретролатерально; 12 — пролатерально; 15 — сзади; 16 — дорзально. Масштабные линейки: 8 = 0,1 мм, 9, 11 = 0,5 мм, 10, 13–16 = 0,2 мм.

Сокращения: *Co* — кондуктор, *Cr* — ряд пигментных точек бороздки хелицер, *Eb* — основание эмболюса, *Em* — эмболюс, *Ha* — безволосые участки эпигастральной области.

Ovtchinnikov, 1999 (Central Asia) and *L. vittata* (Strand, 1906) (Tunisia).

COMMENT. Within the genus, structures of the bulb are nearly indistinguishable, but different species can be separated by the shape of the retrolateral tibial apophysis.

Lachesana dyachkovi sp.n.
Figs 1–5, 8–16, 17–19, 22, 26–27.

Lachesana tarabaevi Zonstein et Ovtchinnikov, 1999: 59, f. 1–5 (♂♀, in part, juvenile specimen from Kazakhstan).

TYPES. KAZAKHSTAN: ***Turkistan*** Region: holotype ♂ (ISEA) Bel'tau Mountains, N41°50′09.9″, E68°32′15.4″, residual mountains in steppe, 392 m, 8–9.06.2017 (Yu.V. Dyachkov).

ETYMOLOGY. The specific name is a patronym in honour of Yuri V. Dyachkov (Barnaul, Russia), myriapodologist and friend of the first author, who has provided rich spider material from Southern Kazakhstan, including the type of the new species.

DIAGNOSIS. *Lachesana dyachkovi* sp.n. differs from the similar Central Asian species *L. tarabaevi* by having strongly modified cheliceral fangs bent >90° (*vs*. almost unmodified, bent only at tip), carapace lacking pattern (*vs*. present), relatively shorter tibial apophysis (cf. Figs 22–23) with distal part as wide as tibia (*vs*. distal part longer than tibia width) and also by size: 13.7 total length and 6.7 carapace length *vs*. 15–22 total length and carapace length 7.93–9.05 in *L. tarabaevi*. Holotypes of the two species differ by the number of spines, especially on leg I, 55 in the new species and 81 in *L. tarabaevi* and also the leg formula is 4312 in *L. dyachkovi* sp.n. *vs*. 4132. In addition, the two species can be separated by the size and interdistances of hairless areas (*Ha*) on the epigaster: separated by 3 diameters in the new species and 2 diameters in *L. tarabaevi*.

DESCRIPTION. Male (holotype). Total length 13.7. Carapace: 6.7 long, 4.5 wide. Eye measurements: AME: 0.19, ALE: 0.23, PME: 0.19, PLE: 0.23, AME–AME: 0.13, AME–PME: 0.09, PME–PME: 0.13, MOA-L: 0.44, MOA-WA: 0.5, MOA-WP: 0.43. Prosoma and all limbs yellow. Carapace without pattern. Chelicera with modified fang, fang bent >90°, groove with short row of pigment dots of (*Cr*). Chelicera with 2 promarginal teeth, one large and a smaller one. Abdomen and spinnerets yellow. Abdomen with gray cardiac mark and four longitudinal rows of gray spots. Book-lung opercula with indistinct margins, covered with the same type of setae as other parts of the epigaster except the epiandrus. Epiandral area dark brown, distinct, covered with setae shorter than that on the rest of epigaster; epigaster with a pair of hairless (lacking setae) areas (*Ha*) anterior to epiandrus. Legs with numerous spines, from 55 to 81.

Leg measurements:

	Fe	Pt	Ti	Mt	Ta	Total
Palp	2.5	1.0	0.85	–	1.8	6.15
I	5.75	2.35	4.5	4.6	3.2	20.4
II	5.5	2.25	3.95	4.9	3.35	19.95
III	5.55	2.3	3.4	6.25	3.3	20.8
IV	6.55	2.5	4.3	8.05	3.75	25.15

Leg spination:

	Fe	Pt	Ti	Mt	Total
I	d7 p5 r5	p1	p6 r2 v7	p4 r2 v16	55
II	d5 p4 r4	p2	p4 r2 v9	p7 r5 v17	59
III	d5 p4 r4	d1 p2 r1	d3 p5 r4 v9	d7 p8 r3 v22	78
IV	d6 p4 r5	d1 p2 r1	d3 p5 r5 v7	d6 p7 r7 v22	81

Palp as in Figs 11–14, 17–19, 22; femur long, almost as long as tibia+cymbium, 4 times longer than wide; patella and tibia of equal length; tibia with long apophysis, tibia together with apophysis as long as cymbium, anterior part of apophysis as long as tibia width; cymbium about 1.8 times longer than wide, covered with both normal and sparse spine-like setae; bulb elongate, 1.3 times longer than wide; base of embolus (*Eb*) large, ½ of the tegular length, covered with transverse wrinkles; embolus filamentous, lying in chute formed by conductor, obscured on undissected bulb.

Female unknown.

BIOLOGY. Almost nothing is known about the biology of the new species. Like all other known species of *Lachesana*, the new species was collected in an arid habitat (Fig. 27). By analogy with other species of the genus it can be assumed that females of *L. dyachkovi* sp.n. live in deep burrows and are difficult to collect, while males are free-living, wandering.

DISTRIBUTION (Fig. 26). Reliably known only from the type locality. The record of *L. tarabaevi* by Zonstein et Ovtchinnikov [1999] from the Karatau Mountains in Southern Kazakhstan is based on a juvenile specimen. Logunov *et al*. [2012] in the popular book 'Spiders of Kazakhstan' provide data that *L. tarabaevi* dwells in semidesert habitats of the southern foothills of the Karatau Mountain Range. The Karatau Mountain Range is close to the type locality of *L. dyachkovi* sp.n. (about 150 km), and we consider records of *L. tarabaevi* from this area refer to *L. dyachkovi* sp.n.

Lachesana tarabaevi Zonstein et Ovtchinnikov, 1999
Figs 6–7, 20–21, 23–25, 26.

Lachesana tarabaevi Zonstein et Ovtchinnikov, 1999: 59, f. 1–5 (♂♀, in part, juvenile specimen from Kazakhstan belongs to *L. dyachkovi* sp.n.).

MATERIAL EXAMINED. Photographs of paratypes collected together with the holotype male Kyrgyzstan, 1.5 km E of Dzhalal-Abad foothills of Ferghansky Mt. Range, 40°56′N 73°02′E, South Kyrgyzstan, 11–21.03.1994 (S.V. Ovtchinnikov, S.L. Zonstein).

DIAGNOSIS. See diagnosis for *L. dyachkovi* sp.n.

DESCRIPTION. See Zonstein & Ovtchinnikov [1999]. Spination (total number of spines in the holotype): I 81, II 61, III 79, IV 84.

NOTES. The description of the male holotype of *L. tarabaevi* is lacking a description of the cheliceral fang which is different from all other species (Zonstein et Kunt, pers. comm.) of the genus in being almost unmodified with a slightly bent tip only. The description also lacks details about the setae covering the anterior part of the chelicera. Males of *L. tarabaevi* have a small in size clusters of strong setae near the base of the fang. In the new species, setae are weaker and are not clustered but evenly spread on the terminal part of the chelicera. Hairless areas on the epigaster are large and separated by about 2 diameters (Zonstein, pers. comm.). Cheliceral groove of this species also has a row of pigmented dots as shown in Fig. 15.

DISTRIBUTION (Fig. 26). This species was described based on specimens from Kyrgyzstan, eastern Uzbekistan, western Tajikistan and southern Kazakhstan. The Kazakh record is based on a juvenile specimen and refers to *L. dyachkovi* sp.n.

Discussion

While studying new species we noticed the presence of hairless areas (*Ha*) on the epigaster, completely free of setae anterior to the epiandrus. The size of this area differs in the new species and *L. graeca* Tha-

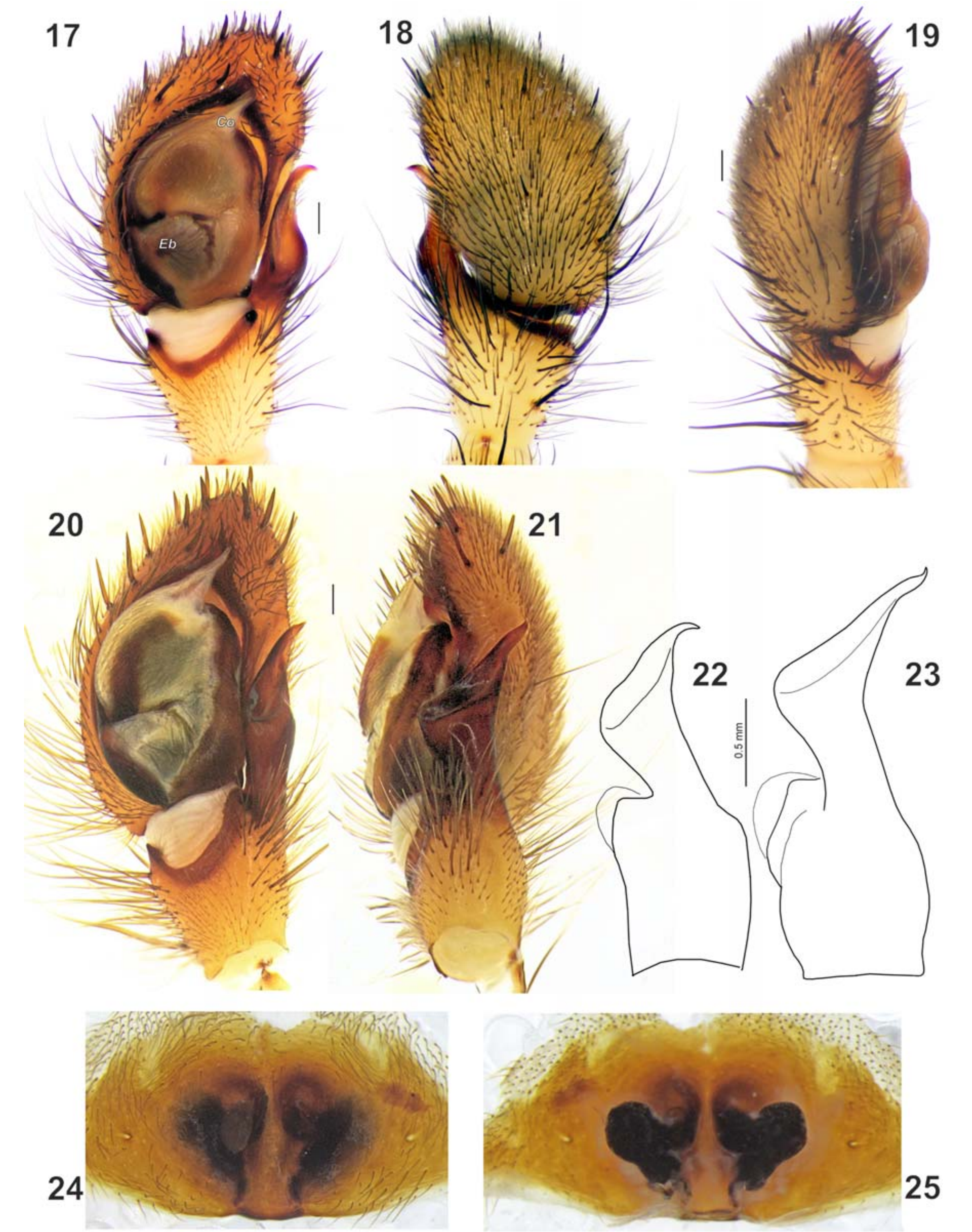


Fig 17–25. Male palp (17–23) and epigyne (24–25) of *Lachesana dyachkovi* sp.n. (17–19, 22) and *L. tarabaevi* (20–21, 23–25). 17, 20, 24 — ventral; 18, 25 — dorsal; 19 — prolateral; 21–23 — retrolateral. Figs 20–21, 24–25 — courtesy of S.L. Zonstein. Scale bars: 17–21 = 0.2 mm, 22–23 = 0.5 mm.

Abbreviations: *Eb* — base of embolus, *Co* — conductor.

Рис. 17–25. Пальпа самца (17–23) и эпигина (24–25) *Lachesana dyachkovi* sp.n. (17–19, 22) и *L. tarabaevi* (20–21, 23–25). 17, 20, 24 — вентрально; 18, 25 — дорзально; 19 — пролатерально; 21–23 — ретролатерально. Рис. 20–21, 24–25 — предоставлены С.Л. Зонштейном. Масштабные линейки: 17–19 = 0,2 мм, 22–23 = 0,5 мм.

Сокращения: *Eb* — основание эмболюса, *Co* — кондуктор.

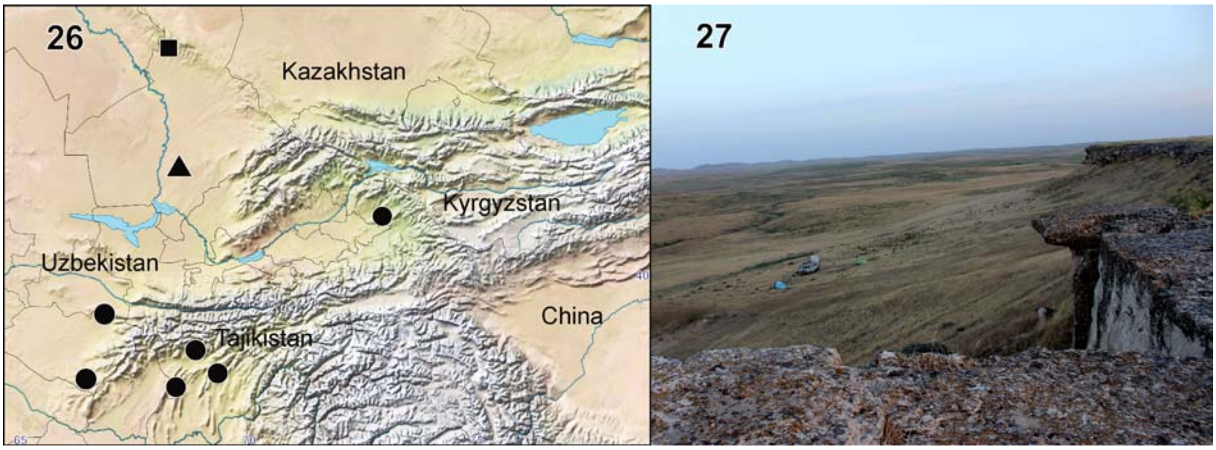


Fig 26–27. Collecting localities of *Lachesana* species in Central Asia (26) and habitat of *L. dyachkovi* sp.n. (27). *L. dyachkovi* sp.n. — triangle; *L. tarabaevi* — circle; record of *L. tarabaevi* in Kazakhstan, based on a juvenile specimen, refers to *L. dyachkovi* sp.n. — square.

Рис. 26–27. Находки видов *Lachesana* в Центральной Азии (26) и биотоп *L. dyachkovi* sp.n. (27). *L. dyachkovi* sp.n. — треугольник; *L. tarabaevi* — круг; находка ювенильного экземпляра *L. tarabaevi* в Казахстане, возможно, принадлежащего к виду *L. dyachkovi* sp.n. — квадрат.

ler et Knoflach, 2004 (cf. Fig. 8 and fig. 6 in Thaler & Knoflach [2004]) as well as in *L. dyachkovi* sp.n. and *L. tarabaevi*. The latter species has larger hairless areas separated by 2 diameters. One of the most characteristic features of the genus, a modified (strongly bent) fang of the male chelicera has been found in all species including the new species, with exception of *L. tarabaevi* (only tip of the fang is slightly bent). In most spiders, leg formula is stable within the genus or even family, but in *Lachesana* there were at least four different formulae: 4123, 4321 [Jocqué, 1991], 4132 in *L. tarabaevi* and 4312 in *L. dyachkovi* sp.n.

It is likely that the species diversity of *Lachesana* in Central Asia is greater than two. Sergei Zonstein (pers. comm.) mentioned that he saw very large specimens, larger than *L. tarabaevi*, among material from Badkhyz (southeastern Turkmenistan) in the collection of the Zoological Institute in St-Petersburg. Unfortunately, these specimens cannot be located at this time (Nekhaeva, pers. comm.).

Acknowledgements

We thank Yuri V. Dyachkov (Barnaul, Russia) for collecting the material treated here, Sergei L. Zonstein (Tel-Aviv, Israel) and Kadir B. Kunt (Ankara, Turkey) for providing comparative figures of the paratypes of *L. tarabaevi* and information about this species. We also thank Anna A. Nekhaeva and Kirill G. Mikhailov (Moscow, Russia) for help in searching for *Lachesana* specimens in the collection of the Zoological Institute (St-Petersburg) and Zoological Museum (Moscow) respectively. The English of the final draft was kindly checked by Sarah Crews (San Francisco, USA).

References

Gistel J. 1848. Naturgeschichte des Thierreichs für höhere Schulen. Stuttgart. xvi + 220 S.

Jocqué R. 1991. A generic revision of the spider family Zodariidae (Araneae) // Bulletin of the American Museum of Natural History. Vol.201. P.1–160.

Jocqué R., Dippenaar-Schoeman A.S. 2006. Spider families of the World. Musée Royal de l'Afrique Central Tervuren. 336 pp.

Levy G. 1990. Spiders of the genus *Lachesana* and a new storenoid genus from Israel (Araneae: Zodariidae) // Zoological Journal of the Linnean Society. Vol.98. P.327–362.

Logunov D.V., Gromov A.V., Timokhanov V.A. 2012. Spiders of Kazakhstan. Manchester, UK: Siri Scientific Press. 232 pp.

Marusik Yu.M., Kovblyuk M.M. 2011. [Spiders (Arachnida, Aranei) of Siberia and Russian Far East]. Moscow: KMK Scientific Press. 344 pp. [In Russian]

Mikhailov K.G. 2013. The spiders (Arachnida: Aranei) of Russia and adjacent countries: a non-annoteted cheklist. Arthropoda Selecta. Supplement No.3. 262 pp.

Savigny J-C., Audouin V. 1826. Explication sommaire des planches d'arachnides de l'Égypte et de la Syrie // Description de l'Égypte, ou recueil des observations et des recherches qui ont été faites en Égypte pendant l'expédition de l'armée française, publié par les ordres de sa Majesté l'Empereur Napoléon le Grand. Histoire Naturelle. Vol.1. No.4. P.1–339.

Strand E. 1932. Miscellanea nomenclatorica zoologica et palaeontologica, III, IV // Folia Zoologica et Hydrobiologica, Rigā. Vol.4. P.133–147, 193–196.

Thorell T. 1869. On European spiders. Part I. Review of the European genera of spiders, preceded by some observations on zoological nomenclature // Nova Acta Regiae Societatis Scientiarum Upsaliensis. Vol.3. No.7. P.1–108.

World Spider Catalog. 2019. World Spider Catalog. Version 20.5. Natural History Museum Bern, online at http://wsc.nmbe.ch (accessed on September 2019).

Zonstein S.L., Ovtchinnikov S.V. 1999. A new Central Asian species of the spider genus *Lachesana* Strand, 1932 (Araneae, Zodariidae: Lachesaninae) // Tethys Entomological Research. Vol.1. P.59–62.

Responsible editor K.G. Mikhailov